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CLEAN WATER ACT COMPLIANCE INVESTIGATION

ExxonMobil Oil Corporation, Everett Terminal

52 Beacham Street Everett. Massachusetts NEIC Project No.: VP1082

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INTRODUCTION

At the request of U.S. Environmental Protection Agency (EPA) Region 1, EPA's National Enforcement Investigations Center (NEIC) conducted a Clean Water Act (CWA) compliance investigation of the ExxonMobil Oil Corporation (ExxonMobil) facility located in Everett, Massachusetts. Pollution control, wastewater generation, and management operations for the facility are subject to environmental permits and regulations administered by the EPA, the Massachusetts Department of Environmental Protection (MassDEP), and EPA Region 1.

FACILITY BACKGROUND

ExxonMobil is a petroleum products distribution and bulk storage terminal. The facility is composed of approximately 110 acres (including Sprague Energy), and consists of a light fuel (gasoline, diesel, and jet fuel) storage area known as the North Tank Farm; a heavy fuel oil and asphalt storage area known as the South Tank Farm; and a marine bulk product receiving and shipping facility, known as the Marine Facilities. Additionally, Sprague Energy is co-located on the South Tank Farm, but it is not owned by ExxonMobil.

REGULATORY BACKGROUND

ExxonMobil is authorized to discharge wastewater to the Island End River, a small tributary to the Mystic River, under National Pollutant Discharge Elimination System (NPDES) permit No. MA0000833 (Appendix A). NPDES Permit No. MA0000833 (NPDES permit) authorizes ExxonMobil to discharge storm water, groundwater, hydrostatic test water, boiler condensate, fire testing water, truck wash water, effluent pond water, and continuous treatment system filter backwash water through outfall 01A; storm water, groundwater, hydrostatic test water, boiler condensate, fire testing water, truck wash water, and effluent pond water through outfall 01B; and storm water, groundwater, hydrostatic test water, boiler condensate, fire testing water, truck wash water, effluent pond water, and continuous treatment system filter backwash water through outfall 01C. Outfalls 01, 01A and 01B discharge through to the Island End River.

ExxonMobil also is responsible for storm water and any other discharges from Sprague Energy into ExxonMobil's storm water collection system. All discharges generated in the North Tank Farm, South Tank Farm, and Marine Facilities flow to the facility's storm drain system and collect at the wastewater treatment system (WWTS) located in the North Tank Farm.

ON-SITE INSPECTION SUMMARY

Introduction

NEIC conducted the on-site inspection of ExxonMobil June 23 through June 25, 2014. The NEIC inspection team consisted of Christine Alvarez (project manager) and Daren Vanlerberghe. Credentials were presented to Damian Guzman (D. Guzman), terminal superintendent, during the

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opening meeting on June 23, 2014. A closing meeting was held on June 25, 2014, to discuss the preliminary inspection observations. The NEIC inspection team stressed that final determinations will be made in conjunction with regional personnel and following review of documents provided by ExxonMobil.

Inspection Activities

The NEIC inspection team assessed ExxonMobil's compliance with the NPDES permit requirements and its storm water pollution prevention plan (SWPPP), which is referenced in the NPDES permit, by conducting detailed discussions with ExxonMobil staff and by observing facility process areas, wastewater generation sources, treatment facilities, storm water management areas, outfall locations, and sampling and monitoring locations. Photographs taken by the NEIC inspection team are located in **Appendix B.**

Process Overview and Wastewater and Storm Water Management

ExxonMobil operated as a refinery from 1921 through 1964. In 1964, ExxonMobil ceased refinery operations but continued to operate as a petroleum products distribution and bulk storage terminal. As mentioned previously, ExxonMobil consists of a four areas: North Tank Farm, South Tank Farm, Marine Vessel Dock and Marine Terminal (Marine Facilities), and Sprague Energy Asphalt Terminal (which is not owned by ExxonMobil). The Marine Facilities transfer petroleum products between barges to onshore tanks. The North Tank Farm is located north of Beacham Street, which runs down the middle and splits the ExxonMobil facility into a north and south area. The South Tank Farm is located south of Beacham Street. In general, ExxonMobil receives, stores, distributes, and transfers products between tanks within its facility.

Tankers and barges carrying petroleum products are received at Marine Facilities, and the products are pumped through an aboveground pipeline to aboveground storage tanks located in the North or South Tank Farm areas. Tanker trucks deliver fuel additives (i.e., ethanol and additives), which are transferred to tanks at one of the tank farms. Petroleum products are blended with the appropriate additives and transferred to tank trucks at the loading rack in the North Tank Farm. The terminal operates 24 hours a day, 365 days a year.

Storm water drains by gravity into secondary containment areas, drainage ditches, catch basins, or sumps throughout the ExxonMobil facility. The collected storm water is pumped via a system of sump pumps through a subsurface collection system to ExxonMobil's WWTS. Stormwater from isolated secondary containment areas (i.e., product pumps) also is collected by vacuum truck and discharged into the WWTS. The WWTS is located in the North Tank Farm area and includes an oil/water separator (OWS), a conventional oil/water separator (or bypass flume), and a continuous treatment system (CTS). The CTS includes multimedia filtration and granulated activated carbon (GAC). The CTS has a design capacity of 280 gallons per minute (GPM). It treats dry and wet weather flows up to 280 GPM and discharges through outfall 01C from a treated

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water holding tank. Flows that exceed 280 GPM are discharged through outfall 01A up to a capacity of 4,000 GPM. If flows exceed 4,000 GPM, all other wastewater is discharged through outfall 01B. ExxonMobil also has a storage tank known as tank 140. Treated wastewater from the WWTS can be diverted to tank 140 before it is discharged to outfalls 01A or 01C in order to regulate the flow.

SUMMARY OF FINDINGS AND OBSERVATIONS

Findings and observations identified by NEIC during the investigation are summarized in **Table 1**. These findings and observations are linked to specific supporting documents that can be found in individual appendices to this table. These findings and observations can be categorized as either areas of noncompliance or areas of concern. Areas of concern are inspection observations of potential problems or activities that could impact the environment, result in future or current noncompliance, and/or are areas associated with pollution prevention.

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS
ExxonMobil Oil Corporation
Everett, Massachusetts

#	Regulatory Citation	Findings/Supporting Notes	Evidence			
ARI	AREAS OF NONCOMPLIANCE					
1	NPDES Permit No. MA0000833, Part	Finding:	Appendix A –			
	1.A.14. – The permittee shall inspect, operate,	During the NEIC inspection, the inspection team observed that the	NPDES Permit			
	and maintain the continuous treatment system,	corrugated plate separator (CPS) was stagnant and the CPS plates	No.			
	conventional oil water separator and the	were filled with algae and debris. According to NPDES permit No.	MA0000833			
	corrugated plate separator at the facility to	MA0000833 (Appendix A), "The permittee shall at all times properly				
	ensure that the Effluent Limitations and	operate and maintain all facilities and systems of treatment and	Appendix B –			
	Monitoring Requirements and other	control." ExxonMobil was not properly operating and maintaining	NEIC Field			
	conditions contained in this permit are met.	the CPS at the time of the NEIC inspection.	Investigation			
	The permittee shall ensure that all	_	Photographs			
	components of the facility's Storm Water	Supporting Notes:				
	Pollution Prevention Plan, including those	During the NEIC inspection, the NEIC inspection team observed that the	Appendix C –			
	that specifically address the operation and	corrugated plate separator was stagnant and the CPS plates were filled	Storm Water			
	maintenance of the separator(s) and other	with algae and debris (Appendix B , photographs IMGP0004 and	Pollution			
	components of the storm water conveyance	IMGP0005). In order for the CPS to operate properly, the plates must be	Prevention Plan			
	system, are complied with.	cleaned regularly prior to treatment or wastewater/storm water influx. If				
		the CPS plates are not cleaned, treatment will be less effective or will not	Discussions			
	NPDES Permit No. MA0000833, Part 1.B.1	work.	with Scott			
	- STORM WATER POLLUTION		Wehmeyer and			
	PREVENTION PLAN – The permittee shall	The NEIC inspection team reviewed the SWPPP (Appendix C). The	other			
	develop, implement, and maintain a Storm	SWPPP states that OWS must be visually observed on a daily basis. The	ExxonMobil			
	Water Pollution Prevention Plan (SWPPP)	OWS system includes a separation flume, a corrugated plate separator,	staff			
	designed to reduce, or prevent, the discharge	and a set of wet wells. On June 23, 2014, NEIC inspectors asked Scott				
	of pollutants in storm water to the receiving	Wehmeyer, chief operator for the WWTS, if the CPS was inspected and,				
	waters identified in this permit. The SWPPP	if so, how often. S. Wehmeyer stated that daily inspections were				
	shall be a written document and consistent	performed at the wastewater treatment area, which includes the CPS.				
	with the terms of this permit. The permittee	ExxonMobil does not, however, maintain documentation to confirm if				
	shall comply with the terms of its SWPPP.	daily inspections are being performed.				
	-					

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett. Massachusetts

Everett, Massachusetts					
#	Regulatory Citation	Findings/Supporting Notes	Evidence		
	Stormwater Pollution Prevention Plan, Section 3.3 Preventative Maintenance of Stormwater Treatment System – Maintenance of the stormwater drainage system is fully described in the "Operation and Maintenance Manual, Stormwater Treatment System," also includes the following: The OWS is visually observed on at least a daily basis and oil is skimmed off the separator, as needed.	The CPS is designed to coalesce small oil droplets into larger ones by separating the sediment (sinks to the bottom) from the oil (floats to the top). If the CPS plates are congested with debris, sediment, or algae, separation of sediment from oily material becomes less efficient and treatment inadequate. ExxonMobil should at all times properly operate and maintain all facilities and systems of treatment and control. ExxonMobil was not properly operating and maintaining the CPS at the time of the NEIC inspection.			
	NPDES Permit No. MA0000833, Part II.B.1. Proper Operation and Maintenance – The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit and with the requirements of storm water pollution prevention plans				
AR	EAS OF CONCERN				
A	NPDES Permit No. MA0000833, Part A.1.23.b – The collection, storage and treatment systems shall be designed, constructed, maintained and operated to treat the total equivalent volume of storm water, groundwater, hydrostatic test water, boiler condensate, fire testing water, truck wash water, effluent pond water and continuous treatment system filter backwash water which would result from a 10-year 24-hour precipitation event, which volume shall be discharged through outfall 01C and outfall	ExxonMobil is not maximizing wastewater storage capacity throughout the facility and is not controlling hydraulic distribution of wastewater through the wastewater treatment system in order to treat the wastewater up to 280 GPM through the continuous treatment system, except during significant storm events. In addition, ExxonMobil is not following procedures outlined in the <i>Terminal Operator's Guide</i> (TOG), which includes criteria on WWTS flow capacities and distribution through each treatment system and outfall. According to NPDES permit No. MA0000833 (Appendix A), most dry weather and wet weather flow collected at the ExxonMobil facility should discharge through outfall 01C and/or outfall 01A. Wastewater	Appendix A – NPDES Permit No. MA0000833		

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett, Massachusetts

#	Regulatory Citation	270.00	<u>r, Massacnusett</u> Finding	s/Supporting Notes		Evidence
#		romorio noll.			r flores un to ita	Evidence
	capacity of the continuous treatment system [280 GPM] shall be treated through the continuous treatment system and discharged at outfall 01C. The flow through the corrugated plate separator shall not exceed 4,000 GPM.	design capac through outf an oil/water	ity of 280 gallons all 01A flows throus separator treatmen	ather flows and storm water per minute. Wastewater di ugh a corrugated plate sepa t system designed to treat of to its design capacity of 4	scharged rator, which is lry weather	Appendix D – Terminal Operator's Guide
	NPDES Permit No. MA0000833, Part A.2. Footnote – Sampling frequency of 1/month is defined as the sampling of one (1) significant rain event in each calendar month. Monthly sampling is only required if there is discharge from outfall 01A during a calendar month. Sampling frequency of quarterly is defined as the sampling of one (1) event in each quarter. Quarters are defined as the interval of time between the months of: January through	 All dry w by dry we and disch Moderate and disch Heavy ste for treatn 	lowing: yeather flow, 0–280 eather treatment sy harged to outfall 01 e storm event flow, harged to outfall 01 form event flow, 4,0 hent by the OWS o	C. 280–4,000 GPM, is treated by the O'stem (DWTS; also known C. 280–4,000 GPM, is treated A without treatment by the 000–13,600 GPM, is pump or DWTS following the storransferred to tank 140.	WS followed as the CTS) d by the OWS DWTS. ed to tank 140	Appendix E – DMR Daily Flow Spreadsheet for Outfalls 01A and 01C Discussions with ExxonMobil staff
	March, inclusive; April through June, inclusive; July through September, inclusive; and October through December, inclusive. Quarterly sampling shall be performed concurrently with the monthly monitoring event. The permittee shall submit to EPA and MassDEP the results of any additional testing of the parameters established for outfall 01A	NEIC does nevaluation of compare the through outf	not have enough flow f ExxonMobil's rea TOG criteria to Exalls 01A and 01C. Iuded in ExxonMo d summarized the f	ow or rain data to perform a al-time flow data. NEIC di axonMobil's total daily discondity total flow data for o bil's DMR package (Appe following daily flow data for	d, however, charge flows utfalls 01A and ndix E). NEIC	
	if conducted in accordance with EPA approved methods consistent with the provisions of 40 CFR § 122.41(l)(4)(ii).	Year	No. of Discharge Days through Outfall 01A	No. of Days Flow Through Outfall 01C Reached 280 GPM (403,200 gallons per day)		
		2012	281	3		
		2013	262	0		
		2014 (Jan. – May)	123	0		
		treatment thr (403,200 gal available, it	ough the CTS as d lons per day). In a	exxonMobil does not optimalescribed in the TOG or upunddition, although rainfall dishobil utilizes outfall 01A nevents.	to 280 GPM lata is not	

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett, Massachusetts

11	# December Citation Einstein Notes				
# Regulatory Citation		Findings/Supporting Notes	Evidence		
		Based on discussions with NEIC on June 24, 2014, ExxonMobil has a 1.45-million gallon storage tank, tank 140. According to facility personnel, tank 140 receives wastewater from wet well #2 (part of the WWTS), backwash from carbon filters, and excess storm water during rainfall events. Wastewater from tank 140 is returned to the sediment tank (head works of WWTS) or it can bypass the head works and discharge directly to outfall 01B during major storm events (greater than 4,000 GPM). According to the TOG, tank 140 should be used as storage and during heavy rainfall events in order to control wastewater feed into the WWTS.			
		Based upon the information presented above, ExxonMobil does not appear to follow procedures outlined in the TOG. If ExxonMobil were to maximize the storage capacity throughout the site, use tank 140 as specified in the TOG, and control hydraulic distribution through the WWTS as specified in the TOG, treatment efficiency and flow			
		optimization (up to 280 GPM and through outfall 01C) would improve.			
В.	NPDES Permit No. MA0000833, PART II. E. DEFINITIONS AND ABBREVIATIONS, 1. Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month calculated as the sum of all	ExxonMobil may be manipulating how they collect and analyze for total suspended solids (TSS) in order to meet their monthly average and daily maximum permit limits (further known as permit limits for this observation). Appendix F includes a table with examples where more than one TSS	Appendix A – NPDES Permit No. MA0000833 Appendix F –		
	"daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.	sample was analyzed within a 24 hour period, or when multiple TSS samples were collected over a month in order to meet the permit limits. The NPDES permit only requires one sample per month for TSS. During NEICs review of ExxonMobil's DMRs (Appendix G), if the TSS sample met the monthly average for the month, no other TSS samples were	Example of Discharge Monitoring Reports' Sampling		
	NPDES Permit No. MA0000833, PART II. E. DEFINITIONS AND ABBREVIATIONS, 1. Daily Discharge means the discharge of a pollutant measured	analyzed or collected again later in the month. If the TSS sample did not meet the permit limits for the month, ExxonMobil would have additional TSS samples analyzed in order to meet the permit limits.	Results Spreadsheets Appendix G –		
	during the calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated	During a phone conference with ExxonMobil on August 13, 2014, NEIC and ExxonMobil representatives discussed how monthly average and daily maximum limits were being calculated for the discharge monitoring reports (DMRs) (Appendix G). Although several representatives from ExxonMobil and Triumvirate were on the conference call, D. Guzman	DMRs for July 2012, January 2014, and May 2014		
	as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the	and Tim Martin, environmental advisor from ExxonMobil, and Darrel Interess, wastewater manager from Triumvirate, answered NEIC's	Discussions with D. Guzman, Tim		

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett, Massachusetts

#	Regulatory Citation	Findings/Supporting Notes	Evidence
	"daily discharge" is calculated as the average measurement of the pollutant over the day.	questions. Triumvirate is contracted to perform compliance sampling and calculate permit limits for ExxonMobil DMRs.	Martin from ExxonMobil and Darrel
		D. Interess explained that, for TSS samples, three individual samples are collected within a 24-hour sampling event. All three samples are sent to the contract laboratory. Only one of the three TSS samples are analyzed at a time to see if it meets the monthly average or daily maximum (permit limits). If the first TSS sample that's analyzed does not meet the permit limits, the second TSS sample is analyzed and so forth. If more than one TSS sample (of the three) is analyzed within the same day (24-hour period), all samples analyzed are averaged to calculate the monthly average. If, however, the average of all three TSS samples does not meet the permit limits, then another set of TSS samples (three samples) will be collected during the next discharge event. Similarly, one or more of the three TSS samples will be analyzed during this 24-hour period. Triumvirate then adds the average from the first set of samples to the average from the second set of samples, and divides by the number of discharge days (in this example two discharge days).	Interess from Triumvirate
		ExxonMobil/Triumvirate's procedure is to always collect three TSS samples during each sampling event. They do not, however, always analyze all three TSS samples. In addition, it also appears that they only analyze what samples they need in order to meet their monthly average or daily maximum permit limits and will continue to collect additional samples until they meet their TSS permit limits.	
C.	NPDES Permit No. MA0000833, Part 1.B.1 – STORM WATER POLLUTION PREVENTION PLAN – The permittee shall develop, implement, and maintain a Storm Water Pollution Prevention Plan	At the time of the NEIC inspection, catch basin 30, located in the North Tank Farm, was covered in mud, and the storm water controls, including a silt fence and straw hay bales, were falling apart or had fallen down (Appendix B , photographs IMGP001 and IMPG0002).	Appendix A – NPDES Permit No. MA0000833
	(SWPPP) designed to reduce, or prevent, the discharge of pollutants in storm water to the receiving waters identified in this permit. The SWPPP shall be a written document and consistent with the terms of this permit. The	The ExxonMobil SWPPP (Appendix C) requires that the facility perform annual inspections and maintain storm water controls, which include catch basins. During the NEIC closing meeting, D. Guzman stated that ExxonMobil had already fixed the silt fence and removed the mud from around and inside catch basin 30.	Appendix B – NEIC Field Investigation Photographs
	permittee shall comply with the terms of its SWPPP.		Appendix C – SWPPP
	Stormwater Pollution Prevention Plan, Section 3.3 Preventative Maintenance of Stormwater Treatment System –		Discussions with D. Guzman and

Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett, Massachusetts

#	Regulatory Citation	Findings/Supporting Notes	Evidence
	Maintenance of the storm water drainage system is fully described in the "Operation and Maintenance Manual, Stormwater Treatment System," also includes the following:	Tinungo oupporting 1 (otto	ExxonMobil staff
	Catch basins, sediment basins, and drains are inspected annually and then cleaned out to remove solids accumulation as needed.		
D.		To the knowledge of current personnel, ExxonMobil has never activated or exercised pumps 206 or 207, two large axial pumps that pump wastewater through outfall 01B. According to facility personnel, no severe storm event has been big enough (> 13,600 GPM) to require their activation. Because pumps 206 and 207 have never been used or exercised, there is a concern regarding their operational ability. In the "Response to Comment" section of the NPDES permit, during high storm water events, wastewater formerly was bypassed outfall 01B. It is not clear, however, if outfall 01B is in the same location as was described in the previous NPDES permit No. MA0000833.	Appendix A – NPDES Permit No. MA0000833 Discussions with D. Guzman and ExxonMobil staff
Е.		NEIC is unclear about, and ExxonMobil personnel could not define, a "significant rain event." NPDES Permit No. MA0000833, Part 1.A.2, Footnote 2, states that the sampling frequency for outfall 01A is once per month and defined "as the sampling of one (1) significant rain event in each calendar month" (Appendix A). During the NEIC inspection, NEIC inspectors asked ExxonMobil representatives what they defined as a significant rain event; ExxonMobil representatives stated that they did not know. In order for ExxonMobil to properly sample during a significant rain event, it is important to understand what MassDEP's or EPA Region 2's definition is of a significant rain event.	Appendix A – NPDES Permit No. MA0000833 Discussions with D. Guzman and ExxonMobil staff
E		During the NEIC inspection, NEIC inspectors observed that the flow meter at outfall 01C had not been calibrated since July 2012 (Appendix B, photographs IMPG0007 and IMPG0008). The NPDES permit does not require ExxonMobil to calibrate its flow meter on an annual basis. However, frequent calibration is a good maintenance practice to ensure the flow meter provides accurate and constant flow measurements.	Appendix B – NEIC Field Investigation Photographs

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Table 1. SUMMARY OF FINDINGS AND OBSERVATIONS ExxonMobil Oil Corporation Everett, Massachusetts

#	Regulatory Citation	Findings/Supporting Notes	Evidence
			Discussions
			with D. Guzman
			and
			ExxonMobil
			staff